

***Remarks***

Reconsideration of this Application is respectfully requested.

Claims 176-282 are pending in the application, with claims 176, 210, 232, 249, 250, 251, 253, 254, 255, 263, 274, 275, 276, 277, 278, 279 and 280 being the independent claims. Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

***I. Claim Rejections Under 35 U.S.C. § 112, First Paragraph***

Claims 176-180, 182-192, 194, 214, and 216-282 were rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement. *See* Office Action, pages 2-3. Applicants respectfully traverse this rejection.

The basis for this rejection is the Examiner's assertion that:

At the time of filing, multiple mouse embryonic stem cell lines had been established, however embryonic stem cells from other animals were not. While attempts to isolate embryonic stem cells from other species were made, at the time of filing, it was apparent that the methods used to obtain and culture mouse embryonic stem cells could not simply be used for other species. . . . The present claims encompass and specifically recite compositions of stem cells from animals from which the embryonic stem cell has yet to be isolated.

*See* Office Action, page 4. Applicants respectfully disagree. As noted in Applicants' previous replies, embryonic stem cells had been obtained from multiple animal sources in addition to mouse. *See, e.g.*, Applicants' remarks presented in the Reply dated April 23, 2001, pages 7-10. In particular, the evidence of record indicates that, as of the effective filing date, embryonic stem cells had been obtained from animals such as rat, hamster, rabbit, monkey, swine, bird and fish. *See* specification at page 18, line 28, through page 19, line 8, and the references cited and incorporated by reference therein; *see also* Applicants' response filed April 23, 2001, pages 7-10.

The Examiner, in prior Office Actions, has dismissed this evidence, arguing that "none of the references [cited by Applicants] provide substantive evidence that a totipotent ES cells exist other than for the mouse." *See* Office Action dated March 12, 2002, page 4 (underlining in original). Applicants, at the outset, maintain their position that the evidence of record fails to demonstrate conclusively that, at the time of the effective filing date of the present application, totipotent embryonic stem cells had not been obtained from non-mouse species. *See* Applicants' Reply Under 37 C.F.R. § 1.111, filed June 12, 2002, pages 5-6.

Additionally, Applicants emphasize that the claims do not require that the ES cells be totipotent. The claims simply recite "embryonic stem cells." The definition of "embryonic stem cells" provided in the specification indicates that the cells need not be totipotent to be classified as embryonic stem cells. As defined in the specification:

The terms "embryonic stem cell" and "pluripotent embryonic stem cell" refer to a cell which can give rise to *many* differentiated

cell types in an embryo or an adult, including the germ cells (sperm and eggs). This cell type is also referred to as an "ES" cell herein.

*See* specification, page 14, lines 1-4 (emphasis added). Thus, as long as a cell can give rise to many differentiated cell types in an embryo or an adult, that cell is an "embryonic stem cell" as this term is explicitly defined in the present specification. There is nothing to suggest that the cells must be "totipotent" to be considered "embryonic stem cells."

The references cited previously by Applicants demonstrate the production of cells from a variety of different animals which "can give rise to many differentiated cell types in an embryo or an adult." Thus, the references clearly demonstrate the production of embryonic stem cells from numerous animal species in addition to mice. Since the basis for the enablement rejection is the Examiner's assertion that, as of the effective filing date of the present application, embryonic stem cells from animals other than mice had not been established, and since this assertion is clearly incorrect, Applicants respectfully request that this rejection be reconsidered and withdrawn.

## ***II. Claim Rejections Under 35 U.S.C. § 102***

The Examiner has acknowledged that Ponting (U.S. Patent No. 5,405,772) does not anticipate the present claims. *See* Office Action, page 6.

### ***III. Claim Rejections Under 35 U.S.C. § 103***

Claims 176-282 were rejected under 35 U.S.C. § 103(a) as obvious over Ponting (U.S. Patent No. 5,405,772), Gibco BRL Products and Reference Guide, chapters 5 and 6 (1997) ("Gibco") and Atsumi *et al.*, *Develop. Growth Differ.* 35:81-87 (1983). *See* Office Action, page 7. Applicants respectfully traverse this rejection.

The present claims comprise or include the use of a cell culture medium that is "capable of preventing differentiation of the embryonic stem cells during expansion of the embryonic stem cells." None of the cited references teach or suggest a culture medium that prevents cell differentiation. *See* Applicants' remarks set forth in the response filed on November 17, 2004, pages 27-28.

With regard to Atsumi, the Examiner asserted that this reference "provides evidence that at the time of filing and issuance of Ponting serum-free conditions for culturing embryonic stem cells were known and used." *See* Office Action, page 7. The claims, however, require that the medium is capable of preventing differentiation of the embryonic stem cells during expansion, not just that the medium is serum-free. The Examiner has not pointed to anything in Atsumi that teaches or suggests a culture medium that prevents cell differentiation during expansion.

With regard to Ponting, the Examiner stated that:

Ponting does not specifically disclose all the specific components listed in the claims, however the use of these components would be obvious because they are factors commonly used in cell culture.

See Office Action, page 7. The Examiner also stated that:

The level of knowledge and skill in the art for culturing cells is high, and there would be a reasonable motivation and expectation of success to use specific components from various sources as generally taught by Ponting to provide for a more defined and optimized media.

See Office Action, page 8.

Applicants note that the pending claims are either altogether silent as to the components of the cell culture medium (*see, e.g.*, claims 176-182), or simply recite ingredients that the medium may comprise (*see, e.g.*, claims 184-188). The use of one or more of the recited ingredients in a cell culture medium, without more, cannot render the present claims obvious because the claims impose a *functional* limitation on the cell culture medium that none of the cited references teaches or suggests, namely that the medium is capable of preventing differentiation of embryonic stem cells during expansion. Even if one were motivated to "provide for a more defined and optimized media" than the media set forth in Ponting, there is no evidence of a motivation in the art to modify the media of Ponting so that it specifically prevents differentiation of embryonic stem cells during expansion.

A *prima facie* case of obviousness cannot be established unless all of the claim elements are taught or suggested by the cited references. See *In re Royka*, 490 F.2d 981, 984-85 (CCPA 1974); see also *In re Glaug*, 283 F.3d 1335, 1341-42 (Fed. Cir. 2002); *In re Rijckaert*, 9 F.3d 1531, 1533 (Fed. Cir. 1993). Since not all elements of the currently presented claims are taught or suggested by the cited references, a *prima facie* case of obviousness has not been established. Applicants respectfully request that the rejection under 35 U.S.C. § 103 be reconsidered and withdrawn.

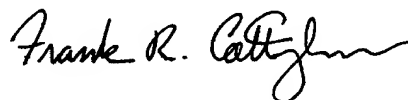
### ***Conclusion***

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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